What is claimed is:

1. An apparatus for measuring a voltage fluctuation waveform of a power source system of a functional circuit operated on a first rated voltage in a semiconductor integrated circuit, comprising:

a power-source-system waveform converting circuit, disposed close to the functional circuit and in the semiconductor integrated circuit and operated on a second rated voltage higher than the first rated voltage, for converting said voltage fluctuation waveform of the power source system into an electrical current waveform;

a power-source-system fluctuation waveform output terminal for outputting said electric current waveform obtained by said power-source-system waveform converting circuit outside the semiconductor integrated circuit; and

a power-source-system fluctuation waveform output wiring, arranged in the semiconductor integrated circuit, for connecting said power-source-system waveform converting circuit and said power-source-system fluctuation waveform output terminal.

2. An apparatus according to claim 1, wherein, when a grounded system of said power-source-system waveform converting circuit is disconnected from a grounded system of the functional circuit, said power-source-system waveform converting circuit converts a potential fluctuation waveform

relative to a ground level of an external voltage source connected to the power source system of the functional circuit, which potential fluctuation waveform is in the form of said voltage fluctuation waveform of the power source system, into said electric current waveform.

3. An apparatus according to claim 1, wherein a grounded system for an I/O circuit of the semiconductor integrated circuit is used as a grounded system of said power-source-system waveform converting circuit.

4. An apparatus according to claim 1, wherein, when a grounded system of said power-source-system waveform converting circuit is connected to a grounded system of the functional circuit, said power-source-system waveform converting circuit converts a potential fluctuation waveform of a potential between the power source system and the grounded system of the functional circuit, which potential fluctuation waveform is in the form of said voltage fluctuation waveform of the power source system, into said electric current waveform.

5. An apparatus according to claim 1, wherein:

said power-source-system waveform converting circuit is an n-channel MOSFET (metal-oxide-semiconductor field effect transistor);

the gate terminal of the n-channel MOSFET is connected

to the power source system of the functional circuit;

the source terminal of the n-channel MOSFET is connected to a grounded system of said power-source-system waveform converting circuit; and

the drain terminal of the n-channel MOSFET is connected to said power-source-system fluctuation waveform output terminal through said power-source-system fluctuation waveform output wiring.

6. An apparatus according to claim 1, wherein said power-source-system fluctuation waveform output terminal is connected to a power source system which supplies the second rated voltage and which is disposed outside the semiconductor integrated circuit.

7. An apparatus according to claim 6, wherein a first resistor having a first predetermined resistance is interposed between said power-source-system fluctuation waveform output terminal and the power source system that supplies the second rated voltage.

8. An apparatus for measuring a voltage fluctuation waveform of a grounded system of a functional circuit operated on a first rated voltage in a semiconductor integrated circuit, comprising:

a grounded-system waveform converting circuit, disposed close to the functional circuit and in the

semiconductor integrated circuit and operated on a third rated voltage higher than the first rated voltage, for converting said voltage fluctuation waveform of the grounded system into an electrical current waveform;

a grounded-system fluctuation waveform output terminal for outputting said electric current waveform obtained by said grounded-system fluctuation waveform converting circuit outside the semiconductor integrated circuit; and

a grounded-system fluctuation waveform output wiring, arranged in the semiconductor integrated circuit, for connecting said grounded-system waveform converting circuit and said grounded-system fluctuation waveform output terminal.

9. An apparatus according to claim 8, wherein said grounded-system waveform converting circuit is connected to a power source system different from the power source system of the functional circuit.

10. An apparatus according to claim 9, wherein a power source system for an I/O circuit of the semiconductor integrated circuit is used as the power source system that is connected to said grounded-system waveform converting circuit.

11. An apparatus according to claim 8, wherein, when

a power source system of said grounded-system waveform converting circuit is connected to a power source system of the functional circuit, said grounded-system waveform converting circuit converts a potential fluctuation waveform of a potential between the power source system and the grounded system of the functional circuit, which potential fluctuation waveform is in the form of said voltage fluctuation waveform of the grounded system, into said electric current waveform.

12. An apparatus according to claim 8, wherein:

said grounded-system waveform converting circuit is a p-channel MOSFET (metal-oxide-semiconductor field effect transistor);

the gate terminal of the p-channel MOSFET is connected to the grounded system of the functional circuit;

the drain terminal of the p-channel MOSFET is connected to a power source system of said grounded-system waveform converting circuit; and

the source terminal of the p-channel MOSFET is connected to said grounded-system fluctuation waveform output terminal through said grounded-system fluctuation waveform output wiring.

13. An apparatus according to claim 8, wherein said grounded-system fluctuation waveform output terminal is connected to a power source system which supplies the third rated voltage and which is disposed outside the semiconductor

integrated circuit.

14. An apparatus according to claim 13, wherein a second resistor having a second predetermined resistance is interposed between said grounded-system fluctuation waveform output terminal and the power source system that supplies the third rated voltage.

15. An apparatus for measuring a voltage fluctuation waveform of a power source system of a functional circuit operated on a first rated voltage in a semiconductor integrated circuit and a voltage fluctuation waveform of a grounded system of the functional circuit, comprising:

a power-source-system waveform converting circuit, disposed close to the functional circuit and in the semiconductor integrated circuit and operated on a second rated voltage higher than the first rated voltage, for converting said voltage fluctuation waveform of the power source system into an electrical current waveform;

a grounded-system waveform converting circuit, disposed close to the functional circuit and in the semiconductor integrated circuit and operated on a third rated voltage higher than the first rated voltage, for converting said voltage fluctuation waveform of the grounded system into an electrical current waveform;

a power-source-system fluctuation waveform output terminal for outputting said first electric current waveform

obtained by said power-source-system waveform converting circuit outside the semiconductor integrated circuit;

a grounded-system fluctuation waveform output terminal for outputting said second electric current waveform obtained by said grounded-system fluctuation waveform converting circuit outside the semiconductor integrated circuit;

a power-source-system fluctuation waveform output wiring, arranged in the semiconductor integrated circuit, for connecting said power-source-system waveform converting circuit and said power-source-system fluctuation waveform output terminal; and

a grounded-system fluctuation waveform output wiring, arranged in the semiconductor integrated circuit, for connecting said grounded-system waveform converting circuit and said grounded-system fluctuation waveform output terminal.

16. An apparatus according to claim 15, wherein, when a grounded system of said power-source-system waveform converting circuit is disconnected from the grounded system of the functional circuit, said power-source-system waveform converting circuit converts a potential fluctuation waveform relative to a ground level of an external voltage source connected to the power source system of the functional circuit, which potential fluctuation waveform is in the form of said voltage fluctuation waveform of the power source system, into

said electric current waveform.

17. An apparatus according to claim 15, wherein said grounded-system waveform converting circuit is connected to a power source system different from the power source system of the functional circuit.

18. An apparatus according to claim 16, wherein said grounded-system waveform converting circuit is connected to a power source system different from the power source system of the functional circuit.

19. An apparatus according to claim 17, wherein a power source system for an I/O circuit of the semiconductor integrated circuit is used as the power source system that is connected to said grounded-system waveform converting circuit.

20. An apparatus according to claim 18, wherein a power source system for an I/O circuit of the semiconductor integrated circuit is used as the power source system that is connected to said grounded-system waveform converting circuit.

21. An apparatus according to claim 15, wherein:

said power-source-system waveform converting circuit is an n-channel MOSFET (metal-oxide-semiconductor field

effect transistor);

the gate terminal of the n-channel MOSFET is connected to the power source system of the functional circuit;

the source terminal of the n-channel MOSFET is connected to a grounded system of said power-source-system waveform converting circuit;

the drain terminal of the n-channel MOSFET is connected to said power-source-system fluctuation waveform output terminal through said power-source-system fluctuation waveform output wiring;

said grounded-system waveform converting circuit is a p-channel MOSFET;

the gate terminal of the p-channel MOSFET is connected to the grounded system of the functional circuit;

the drain terminal of the p-channel MOSFET is connected to the power source system of said grounded-system waveform converting circuit; and

the source terminal of the p-channel MOSFET is connected to said grounded-system fluctuation waveform output terminal through said grounded-system fluctuation waveform output wiring.

22. An apparatus according to claim 15, wherein:

said power-source-system fluctuation waveform output terminal is connected to a power source system which supplies the second rated voltage and which is disposed outside the semiconductor integrated circuit; and

said grounded-system fluctuation waveform output terminal is connected to a power source system which supplies the third rated voltage and which is disposed outside the semiconductor integrated circuit.

23. An apparatus according to claim 22, wherein:

a first resistor having a first predetermined resistance is interposed between said power-source-system fluctuation waveform output terminal and the power source system that supplies the second rated voltage; and

a second resistor having a second predetermined resistance is interposed between said grounded-system fluctuation waveform output terminal and the power source system that supplies the second rated voltage.

24. A semiconductor integrated circuit including a functional circuit, being operated on a first rated voltage, and having a function for measuring a voltage fluctuation waveform of a power source system of the functional circuit, comprising:

a power-source-system waveform converting circuit, disposed close to the functional circuit and in said semiconductor integrated circuit and operated on a second rated voltage higher than the first rated voltage, for converting said voltage fluctuation waveform of the power source system into an electrical current waveform;

a power-source-system fluctuation waveform output

terminal for outputting said electric current waveform obtained by said power-source-system waveform converting circuit outside said semiconductor integrated circuit; and

a power-source-system fluctuation waveform output wiring for connecting said power-source-system waveform converting circuit and said power-source-system fluctuation waveform output terminal.

25. A semiconductor integrated circuit including a functional circuit, being operated on a first rated voltage, and having a function for measuring a voltage fluctuation waveform of a grounded system of the functional circuit, comprising:

a grounded-system waveform converting circuit, disposed close to the functional circuit and in said semiconductor integrated circuit and operated on a third rated voltage higher than the first rated voltage, for converting said voltage fluctuation waveform of the grounded system into an electrical current waveform;

a grounded-system fluctuation waveform output terminal for outputting said electric current waveform obtained by said grounded-system fluctuation waveform converting circuit outside said semiconductor integrated circuit; and

a grounded-system fluctuation waveform output wiring for connecting said grounded-system waveform converting circuit and said grounded-system fluctuation waveform output

terminal.

26. A semiconductor integrated circuit including a functional circuit, being operated on a first rated voltage, and having a function for measuring a voltage fluctuation waveform of a power source system of the functional circuit and a voltage fluctuation waveform of a grounded system of the functional circuit, comprising:

a power-source-system waveform converting circuit, disposed close to the functional circuit and in said semiconductor integrated circuit and operated on a second rated voltage higher than the first rated voltage, for converting said first voltage fluctuation waveform of the power source system into an electrical current waveform;

a grounded-system waveform converting circuit, disposed close to the functional circuit and in said semiconductor integrated circuit and operated on a third rated voltage higher than the first rated voltage, for converting said second voltage fluctuation waveform of the grounded system into an electrical current waveform;

a power-source-system fluctuation waveform output terminal for outputting said first electric current waveform obtained by said power-source-system waveform converting circuit outside said semiconductor integrated circuit;

a grounded-system fluctuation waveform output terminal for outputting said second electric current waveform obtained by said grounded-system fluctuation waveform

converting circuit outside said semiconductor integrated circuit;

a power-source-system fluctuation waveform output wiring for connecting said power-source-system waveform converting circuit and said power-source-system fluctuation waveform output terminal; and

a grounded-system fluctuation waveform output wiring for connecting said grounded-system waveform converting circuit and said grounded-system fluctuation waveform output terminal.